

# PATENT ABSTRACTS OF JAPAN

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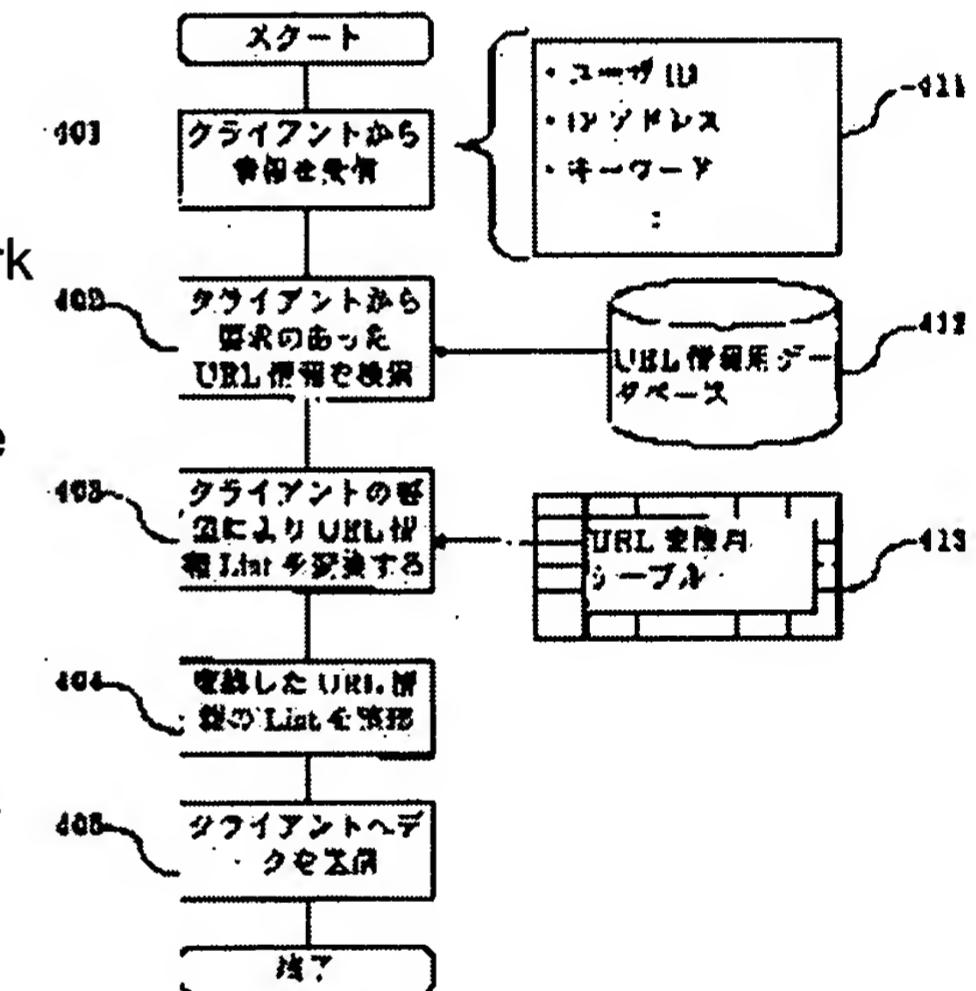
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## (54) URL CONVERSION METHOD AND DEVICE

### (57) Abstract:

**PROBLEM TO BE SOLVED:** To return an optimum URL that is accordant with every client environment by supplying the URL information to a client in accordance with the client environment, the environment of a server to which the client is connected or the network environment.

**SOLUTION:** A retrieval request is received from a client (401) and the URL information is retrieved from a URL information data base in response to the retrieval request (402). A URL information list of retrieval results is converted according to the environment of the requester client and by referring to a URL conversion table 413 (403). The converted URL information list is shaped into a form that can be displayed at the client side (404). Then the shaped URL information list is sent to the client to end this processing (405). Thus, an optimum URL can be returned in accordance with every client environment.



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**TECHNICAL FIELD**

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[Field of the Invention] This invention relates to the URL conversion approach and equipment which make it possible to return optimal URL according to the environment and input of a client.

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**PRIOR ART**

[Description of the Prior Art] The method which specifies URL (uniform resource locator) from the browser which operates as a client is used well to access various kinds of information in the Internet or intranet. It is the specification of the notation specified in order that URL may access a meaning to information, and all users can access the same information which exists in the same location by specifying the same URL.

[0003] Drawing 7 shows signs that the information on a Web server is conventionally accessed from the Web client by the system. Two or more clients have accessed the document 1 which Web server 701 holds by browsers 711-715, respectively. In such a system, in order to prevent that access concentrates on the server holding a certain information, and a load increases, creating an informational duplicate, arranging in the location of two or more URL, and distributing a load is performed. Web server 702 of drawing 7 is the server equipped with the duplicate of the information (for example, document 1) which Web server 701 holds. A document 1 is distributed by servers 701 and 702 and a load is distributed. 703 shows a retrieval site. When informational whereabouts is unknown, it can connect with the retrieval site 703 by the browser, and each client can input predetermined retrieval conditions, and can know URL in which the information corresponding to the condition exists.

[0004] In addition, although Web server 701,702, the retrieval site 703, and the connection relation of each browsers 711-715 are expressed with drawing 7 in one Rhine, in fact, the Internet is accessed and each of these equipments can be connected to the servers 701-703 of arbitration by specifying URL from each browsers 711-715.

[0005] On the other hand, the information stored in another system is changed by the conversion program on a Web server, and there is a system made accessible by URL. Drawing 8 is the example of such a system. It is the network which constitutes the head office system of a certain firm, and Network A is equipped with the documentation management system 801 which can usually be referred to only from the client of dedication. Network B is the Internet and Network C is intranet which constitutes the branch system of for example, the above-mentioned firm.

[0006] It connects with the documentation management system 801 of Network A with the predetermined method, and Web server 802 belonging to Network B is equipped with the conversion program 803. The client belonging to Network B specifies URL from a browser 811, and connects it to Web server 802. According to the directions from a browser 811, the conversion program 803 of Web server 802 takes out a document from a documentation management system 801, changes it into the format which can be displayed by the browser 811, and transmits to a browser 811. Thereby, the document of a documentation management system 801 can be directly accessed from the client of the network B which cannot access a documentation management system 801. Web server 804 and conversion program 805 of Network C run on Web server 802 and conversion program 803 of Network B, and achieve the same function. Thereby, the document of a documentation management system 801 can be directly accessed from the client of the network C which cannot access a documentation management system 801.

[0007] The URL information agency system 806 is a system for saving URL information and sharing between each client. For example, URL of Web server 802 which should be connected in order to connect with the URL information agency system 806 from a browser 811 first in order to know [ which ] whether it should access via a Web server to access the document of a request of a documentation management system 801 from a browser 811, and to access the document concerned is acquired, and this URL is specified, it connects with Web server 802, and the document concerned is accessed via this Web server 802. The URL information agency system 806 has held the information on the ability to be accessed [ which document ] via which Web server beforehand.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] Since URL searched according to the demand from a client is changed into URL according to the environment of a client and he is trying to return it to a client in the system which returns URL according to the demand from a client according to this invention as explained above, optimal URL according to the environment of each client can be returned. The load distribution of following, for example, access concentrating on a predetermined server is avoided and carried out, or URL with a quick rate can be returned according to the location in the network of a client. Moreover, optimal URL can be told according to the type of the user ID of a client, an IP address, a host name, access time, a retrieval keyword, and a browser, the version of an operating system, the count of access, a user's age, a user's executive, a user name, an affiliation organization, the telephone number, language, or a CPU class.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the URL conversion approach and equipment which make it possible to return optimal URL according to the environment and input of a client.

[0002]

[Description of the Prior Art] The method which specifies URL (uniform resource locator) from the browser which operates as a client is used well to access various kinds of information in the Internet or intranet. It is the specification of the notation specified in order that URL may access a meaning to information, and all users can access the same information which exists in the same location by specifying the same URL.

[0003] Drawing 7 shows signs that the information on a Web server is conventionally accessed from the Web client by the system. Two or more clients have accessed the document 1 which Web server 701 holds by browsers 711-715, respectively. In such a system, in order to prevent that access concentrates on the server holding a certain information, and a load increases, creating an informational duplicate, arranging in the location of two or more URL, and distributing a load is performed. Web server 702 of drawing 7 is the server equipped with the duplicate of the information (for example, document 1) which Web server 701 holds. A document 1 is distributed by servers 701 and 702 and a load is distributed. 703 shows a retrieval site. When informational whereabouts is unknown, it can connect with the retrieval site 703 by the browser, and each client can input predetermined retrieval conditions, and can know URL in which the information corresponding to the condition exists.

[0004] In addition, although Web server 701,702, the retrieval site 703, and the connection relation of each browsers 711-715 are expressed with drawing 7 in one Rhine, in fact, the Internet is accessed and each of these equipments can be connected to the servers 701-703 of arbitration by specifying URL from each browsers 711-715.

[0005] On the other hand, the information stored in another system is changed by the conversion program on a Web server, and there is a system made accessible by URL. Drawing 8 is the example of such a system. It is the network which constitutes the head office system of a certain firm, and Network A is equipped with the documentation management system 801 which can usually be referred to only from the client of dedication. Network B is the Internet and Network C is intranet which constitutes the branch system of for example, the above-mentioned firm.

[0006] It connects with the documentation management system 801 of Network A with the predetermined method, and Web server 802 belonging to Network B is equipped with the conversion program 803. The client belonging to Network B specifies URL from a browser 811, and connects it to Web server 802. According to the directions from a browser 811, the conversion program 803 of Web server 802 takes out a document from a documentation management system 801, changes it into the format which can be displayed by the browser 811, and transmits to a browser 811. Thereby, the document of a documentation management system 801 can be directly accessed from the client of the network B which cannot access a documentation management system 801. Web server 804 and conversion program 805 of Network C run on Web server 802 and conversion program 803 of Network B, and achieve the same function. Thereby, the document of a documentation management system 801 can be directly accessed from the client of the network C which cannot access a documentation management system 801.

[0007] The URL information agency system 806 is a system for saving URL information and sharing between each client. For example, URL of Web server 802 which should be connected in order to connect with the URL information agency system 806 from a browser 811 first in order to know [ which ] whether it should access via a Web server to access the document of a request of a documentation management system 801 from a browser 811, and to access the document concerned is acquired, and this URL is specified, it connects with Web server 802, and the document concerned is accessed via this Web server 802. The URL information agency system 806 has held the information on

the ability to be accessed [ which document ] via which Web server beforehand.

[0008]

[Problem(s) to be Solved by the Invention] By the way, in the system of drawing 7, when not knowing URL which should be inputted in order that a client may access the information on desired, the client concerned searches URL by the retrieval site 703, and acquires URL in which the information concerned exists. In this case, if only one URL is registered as URL to which the information concerned exists in the retrieval site 703, there is a problem that the load distribution of the access cannot be concentrated and carried out to the server of that URL.

[0009] For example, by the system of drawing 7, even if another Web server 702 has the duplicate of a document 1 since URL of Web server 701 is returned even if it searches from which browsers 711-715 supposing only URL of Web server 701 was registered into the retrieval site 703 as URL of a document's 1 existence location, the load distribution of the access cannot be concentrated and carried out to Web server 701. Moreover, as URL of a document's 1 existence location, although both URL of Web server 701 and URL of Web server 702 may be returned depending on a retrieval site, it is not known to which URL this should only arrange in parallel and return URL, should look at it from a client, and should be connected. Corresponding to the location on the network where those equipments are connected, browsers 711-713 can be said to Web servers 701 and 702 and browsers 711-715 as it is [ a rate ] quicker for to connect with Web server 701 to be [ a rate ] quicker, and to connect browsers 714-715 to Web server 702. Moreover, in order to carry out a load distribution, it may be said that you connect browsers 711-713 to Web server 701, and want to connect browsers 714-715 to Web server 702, respectively. In a system, such a demand cannot be met conventionally.

[0010] The same problem occurs also by the system of drawing 8. The browser's 812 having un-arranged [ of connecting with Web server 802 of URL told from the URL information agency system 806 concerned ], when it is more desirable to access by Web server 804 course from a browser 812 (for example, a rate becomes quick) and the URL information agency system 806 returns URL of Web server 802 to access the document of a documentation management system 801.

[0011] In the systems (for example, an above-mentioned retrieval site, an above-mentioned URL information agency system, etc.) which provide a client with URL information, this invention aims at offering the URL conversion approach and equipment which make it possible to return the optimal URL information for each client, when specific information exists in the location of two or more URL.

[0012]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention is the URL conversion approach applied to the system which provides a client with URL information, and is characterized by providing this client with the URL information according to the environment of the client which is the partner who offers URL information, the environment of the server which this client connects, or a network environment.

[0013] Moreover, this invention is the URL conversion approach which applies to the system which returns URL information according to the demand from a client, and is characterized by to have the step which receives the URL acquisition demand from a client, the step which retrieve the URL information according to this URL acquisition demand, the step which change the retrieved URL information into the URL information according to the environment of said client, and the step which return the URL information after conversion to said client.

[0014] It is characterized by to have a means are the URL inverter which furthermore applies this invention to the system which returns URL information according to the demand from a client, and receive the URL acquisition demand from a client, a means retrieve the URL information according to this URL acquisition demand, a means change the retrieved URL information into the URL information according to the environment of said client, and a means return the URL information after conversion to said client.

[0015] The step or the means of changing into the URL information according to the environment of said client changes URL information according to the type of the user ID of a client, an IP address, a host name, access time, a retrieval keyword, and a browser, the version of an operating system, the count of access, a user's age, a user's executive, a user name, an affiliation organization, the telephone number, language, or a CPU class.

[0016]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained using a drawing.

[0017] Drawing 1 is the general drawing of the system concerning the gestalt of operation of this invention. Web servers 101 and 102, the retrieval site 103, and clients (browser) 111-115 shall be connected to the Internet or intranet, respectively. Below, it connects with the retrieval site 103 from each browsers 111-115, and the case where the whereabouts of a document 1 is searched is explained to an example.

[0018] Drawing 3 is a schematic diagram for explaining the actuation at the time of the retrieval site 103 ( drawing 1 )

performing URL retrieval from a web browser 306 (equivalent to the browsers 111-115 of drawing 1). drawing 3 -- setting -- the retrieval demand of a web browser 306 to the "document 1" -- taking out (\*\* of drawing 3) -- the URL retrieval system 301 in the retrieval site 103 searches URL in which a document 1 exists from the database 303 for URL information using a search engine 302 (\*\* of drawing 3). Next, the URL transducer 304 changes searched URL with reference to the table 305 for URL conversion (\*\* and \*\* of drawing 3). This conversion is changed into URL according to the environment of the client which advanced the retrieval demand to searched URL. About the detail of this conversion, it mentions later. URL of the conversion result in the URL transducer 304 is returned to the web browser 306 of retrieval demand origin.

[0019] Drawing 4 is a flow chart which shows the operations sequence of a URL retrieval system. The information (retrieval demand) from a client is received at step 401. This information becomes the user ID of demand origin as shown in 411 and an IP address, and a list from the keyword which are retrieval conditions. According to the demand from a client, URL information is retrieved at step 402 from the database for URL information. The URL information list which includes some URL information as a retrieval result is obtained. Next, with reference to the table 413 for URL conversion, the URL information list of retrieval results is changed at step 403 according to the environment of the client of a requiring agency. Next, at step 404, the changed URL information is orthopedically operated in the format which can be displayed by the client. At step 405, the URL information list operated orthopedically is transmitted to a client, and processing is ended.

[0020] Drawing 5 is the example of the table for URL conversion. When the environment of a client is in agreement with the conditions of the "client information" on drawing 5, the part of URL shown in "a part of URL for conversion" is changed as shown in "a part of URL to change." Each of classification 1-15 is the example of the table for URL conversion. The environment of a client expresses various kinds of present condition about various kinds of information currently held in the client, such as various kinds of present condition of the hardware which constitutes a client, or software, a property, an attribute, and a property, or the user who is using the client, a property, an attribute, a property, etc.

[0021] For client information, in drawing 5, a part of URL "user ID =ABCDE" and for conversion is [ a part of "http://Server1.com" and URL to change ] "http://Server2.com" by classification 1. When the user of ABCDE inputs some retrieval conditions and user ID has published the retrieval demand, therefore, a URL retrieval system When URL corresponding to the retrieval condition is searched from the database for URL information and a part of URL of the retrieval result has "http://Server1.com" The part is changed into "http://Server2.com", and the conversion result is returned to the user concerned. Thereby, according to user ID, it is connectable with the server of a suitable host name or an IP address. For example, access from the U.S. enables it to return URL of a server of Japan, respectively in a U.S. server and access from Japan.

[0022] Classification 2 and 3 is examples which change URL, respectively when the IP address and host name of a client are indicated by "client information." Thereby, in access from the client in the specific location on a network, it is convertible at URL with a near network connection path. Classification 4 is an example which changes URL, when the time which the client has accessed is specific time. Thereby, it was able to be said that URL of an alternative server was returned according to time. Classification 5 is an example changed into URL according to the keyword which the user inputted. The example of classification 5 is an example which performs URL conversion, when the keyword which the user inputted is "Japan." Thereby, when the keyword which the user inputted is a specific thing, URL to which the keyword concerned corresponds can be returned as a retrieval result.

[0023] Classification 6 is an example changed into URL according to the type of a browser. When the browsers which are using the client are for example, A company make, B company make, etc., it may be said that dispersion is in the range of the function which is supporting each company browser, and a display is confused when the information on a certain URL is displayed by the browser by A company. If it changes into URL according to the type of a browser and returns to a client at this time, URL by which information is held in the format which can be automatically displayed by those browsers can be returned to a client. Classification 7 is an example changed into URL according to OS (operating system) of a client. For example, it was able to be said that it changed into URL for accessing the image of suitable amount of information according to the version of OS of a client.

[0024] Classification 8 is an example changed into URL according to the count of access. For example, when the count of access from a specific client is more than fixed, employment of returning URL of the detail version instead of the digest version is attained. Classification 9-12 is examples changed into URL according to a user's situation to access. The employment of the gestalt of changing URL so that a suitable server may be accessed according to a user's affiliation organization which performs the same conversion as user ID according to a user's name changed into URL the information on \*\*\*\*\* is also described to be when a user's executive changed into URL to the information that a

font size is big when a user's age is more than fixed is more than fixed is attained.

[0025] Classification 13 is an example changed into URL according to the telephone number of a client. Area is pinpointed with the telephone number and employment of changing URL so that a suitable server may be accessed is attained. Classification 14 is an example changed into URL according to language. It becomes possible to change URL with the language which the user who makes it access is using, so that a suitable server may be accessed. For example, employment of the gestalt of returning URL with the document written in Japanese when the language used is Japanese, and returning URL with the document written in English when the language used is English is attained.

Classification 15 is an example changed into URL according to CPU of a client. According to the engine performance of the machine to access, it becomes possible to change into URL of the page of the optimal amount of information.

[0026] In addition, in drawing 5, although only one user ID was indicated, for example in the column of the "client information" on classification 1, it may be made to perform URL conversion to two or more natural user ID. Moreover, you may express using the so-called wild card as shown in classification 2 or 3. Some conditions are connected by AND or OR and it is good also as conditions for "client information." There may be "a part of URL for conversion" and "a part of [ to change ] combination [ two or more sets of ] of URL.

[0027] When logged in, for example, the information which the user inputted, the information set as the computer which operates as a client beforehand, or the information which the user inputted separately is used for the environment of the client collated with the "client information" on the table for URL conversion. Individual humanity news, such as a user's age and an executive, holds the individual humanity news corresponding to user ID to the predetermined server, and you may make it acquire it by referring to that based on user ID.

[0028] Moreover, in processing of step 403 of drawing 4 using a table for conversion like drawing 5, when the environment of a client is not in agreement with the conditions of "client information", step 404,405 is processed, using the URL information list searched with step 402 as it is. Moreover, even if the environment of a client was in agreement with the conditions of "client information", when "a part of URL for conversion" does not exist in searched URL, step 404,405 is processed similarly, using the URL information list searched with step 402 as it is.

[0029] Drawing 6 (a) and (b) are the result of URL retrieval, and the example of the screen it was [ the screen ] open using the URL information. Here, the example using the conditions shown in the classification 9 of drawing 5 is shown.

[0030] 602 of drawing 6 (a) shows the screen of a result with which the 20-year-old user 601 inputted some retrieval conditions, and searched URL. The link is stretched, respectively by the character string (hot text) showing the site where 2. "1. aaaa" and "bbbb" agreed on retrieval conditions. That is, if a mouse pointer is set into the part of "aaaa [ 1. ]" and a mouse button is clicked, it will jump to searched predetermined URL. Since a user's age is 20 years old and the conditions of the client information on the classification 9 of drawing 5 are not filled with the example of drawing 6 (a), searched URL is returned to a client as it is (\*\* which is not changed). Therefore, a user's 601 click of the part of "aaaa [ 1. ]" displays Screen 603 it was [ Screen ] open using the URL information on the origin which was not changed.

[0031] 605 of drawing 6 (b) shows the screen of a result with which the 55-year-old user 604 inputted the retrieval conditions same in drawing 6 (a), and searched URL. Since it is the same retrieval conditions, 2. "1. same aaaa" and same "bbbb" as drawing 6 (a) are displayed as a retrieval result. However, since a user's age is 55 years old and the conditions of the client information on the classification 9 of drawing 5 are filled with the example of drawing 6 (b), searched URL is changed and it is returned to a client. Therefore, a user's 601 click of the part of "aaaa [ 1. ]" displays Screen 606 it was [ Screen ] open using the changed URL information.

[0032] When a user's age is 50 or less years old, it displays in the alphabetic character of the usual magnitude, and when a user's age is over 50 years old, he is trying to display in a big alphabetic character in the example of drawing 6, even if it is the document Aaaa of the same contents. In addition, although URL returned from the retrieval site may be displayed as it is as means of displaying of a retrieval result, a hot text is usually displayed like the example of drawing 6, and URL is taken as the form embedded in this hot text in many cases. In this case, a user can present a link place, without not knowing whether it is that from which URL of a retrieval result was changed, and making a user conscious of URL conversion.

[0033] Drawing 2 is the example which applied this invention to the system which changes the information stored in another system by the conversion program on a Web server, and makes it accessible by URL. As drawing 8 of the conventional technique explained, it is the network which constitutes the head office system of a certain firm, and Network A is equipped with the documentation management system 201 which can usually be referred to only from the client of dedication. Network B is the Internet and Network C is intranet which constitutes the branch system of for example, the above-mentioned firm.

[0034] It connects with the documentation management system 201 of Network A with the predetermined method, and Web server 202 belonging to Network B is equipped with the conversion program 203. The client belonging to Network B specifies URL from a browser 211, and connects it to Web server 202. According to the directions from a browser 211, the conversion program 203 of Web server 202 takes out a document from a documentation management system 201, changes it into the format which can be displayed by the browser 211, and transmits to a browser 211. Thereby, the document of a documentation management system 201 can be directly accessed from the client of the network B which cannot access a documentation management system 201. Web server 204 and conversion program 205 of Network C run on Web server 202 and conversion program 203 of Network B, and achieve the same function. Thereby, the document of a documentation management system 201 can be directly accessed from the client of the network C which cannot access a documentation management system 201.

[0035] The URL information agency system 206 is a system for saving URL information and sharing between each client. For example, URL of Web server 202 which should be connected in order to connect with the URL information agency system 206 from a browser 211 first in order to know [ which ] whether it should access via a Web server to access the document of a request of a documentation management system 201 from a browser 211, and to access the document concerned is acquired, and this URL is specified, it connects with Web server 202, and the document concerned is accessed via this Web server 202. The URL information agency system 206 has held the information on the ability to be accessed [ which document ] via which Web server beforehand.

[0036] The same URL conversion function as the retrieval site 103 of drawing 1 is given to this URL information agency system 206. What is necessary is just to specifically make it be the same as for drawing 3 - drawing 6 to have explained. Thereby, from the URL information agency system 206, since URL according to the environment of each client comes to be returned, a browser 211 is connected to Web server 202, and a browser 212,213 can return URL in consideration of a load distribution etc. as it connects with Web server 204.

[0037] In addition, after applying, for example to a Web gateway program and changing the URL information to output according to a user environment also except these, you may make it output, although the gestalt of the above-mentioned implementation explained the example which applied this invention to the URL retrieval system or the URL agency system. Moreover, you may make it change URL not according to a client environment but according to a server environment and a network environment. Thereby, the information which the failure has not generated can be certainly accessed now from a client. A server environment and a network environment express various kinds of present condition about the user who is using various kinds of information currently held in the server or the network, such as various kinds of present condition of the hardware which constitutes a server and a network, or software, a property, an attribute, and a property, or a server and a network, a property, an attribute, a property, etc.

[0038] Although a translation table like drawing 5 was used with the gestalt of the above-mentioned implementation, the method of conversion of URL is not restricted to this. For example, URL which doubled the contents with the user situation is registered into the URL storing database, and it narrows down according to the retrieval conditions according to a user environment, and you may make it output.

[0039]

[Effect of the Invention] Since URL searched according to the demand from a client is changed into URL according to the environment of a client and he is trying to return it to a client in the system which returns URL according to the demand from a client according to this invention as explained above, optimal URL according to the environment of each client can be returned. The load distribution of following, for example, access concentrating on a predetermined server is avoided and carried out, or URL with a quick rate can be returned according to the location in the network of a client. Moreover, optimal URL can be told according to the type of the user ID of a client, an IP address, a host name, access time, a retrieval keyword, and a browser, the version of an operating system, the count of access, a user's age, a user's executive, a user name, an affiliation organization, the telephone number, language, or a CPU class.

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## TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] By the way, in the system of drawing 7, when not knowing URL which should be inputted in order that a client may access the information on desired, the client concerned searches URL by the retrieval site 703, and acquires URL in which the information concerned exists. In this case, if only one URL is registered as URL to which the information concerned exists in the retrieval site 703, there is a problem that the load distribution of the access cannot be concentrated and carried out to the server of that URL.

[0009] For example, by the system of drawing 7, even if another Web server 702 has the duplicate of a document 1 since URL of Web server 701 is returned even if it searches from which browsers 711-715 supposing only URL of Web server 701 was registered into the retrieval site 703 as URL of a document's 1 existence location, the load distribution of the access cannot be concentrated and carried out to Web server 701. Moreover, as URL of a document's 1 existence location, although both URL of Web server 701 and URL of Web server 702 may be returned depending on a retrieval site, it is not known to which URL this should only arrange in parallel and return URL, should look at it from a client, and should be connected. Corresponding to the location on the network where those equipments are connected, browsers 711-713 can be said to Web servers 701 and 702 and browsers 711-715 as it is [ a rate ] quicker for to connect with Web server 701 to be [ a rate ] quicker, and to connect browsers 714-715 to Web server 702. Moreover, in order to carry out a load distribution, it may be said that you connect browsers 711-713 to Web server 701, and want to connect browsers 714-715 to Web server 702, respectively. In a system, such a demand cannot be met conventionally.

[0010] The same problem occurs also by the system of drawing 8. The browser's 812 having un-arranged [ of connecting with Web server 802 of URL told from the URL information agency system 806 concerned ], when it is more desirable to access by Web server 804 course from a browser 812 (for example, a rate becomes quick) and the URL information agency system 806 returns URL of Web server 802 to access the document of a documentation management system 801.

[0011] In the systems (for example, an above-mentioned retrieval site, an above-mentioned URL information agency system, etc.) which provide a client with URL information, this invention aims at offering the URL conversion approach and equipment which make it possible to return the optimal URL information for each client, when specific information exists in the location of two or more URL.

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MEANS

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[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention is the URL conversion approach applied to the system which provides a client with URL information, and is characterized by providing this client with the URL information according to the environment of the client which is the partner who offers URL information, the environment of the server which this client connects, or a network environment.

[0013] Moreover, this invention is the URL conversion approach which applies to the system which returns URL information according to the demand from a client, and is characterized by to have the step which receives the URL acquisition demand from a client, the step which retrieve the URL information according to this URL acquisition demand, the step which change the retrieved URL information into the URL information according to the environment of said client, and the step which return the URL information after conversion to said client.

[0014] It is characterized by to have a means are the URL inverter which furthermore applies this invention to the system which returns URL information according to the demand from a client, and receive the URL acquisition demand from a client, a means retrieve the URL information according to this URL acquisition demand, a means change the retrieved URL information into the URL information according to the environment of said client, and a means return the URL information after conversion to said client.

[0015] The step or the means of changing into the URL information according to the environment of said client changes URL information according to the type of the user ID of a client, an IP address, a host name, access time, a retrieval keyword, and a browser, the version of an operating system, the count of access, a user's age, a user's executive, a user name, an affiliation organization, the telephone number, language, or a CPU class.

[0016]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained using a drawing.

[0017] Drawing 1 is the general drawing of the system concerning the gestalt of operation of this invention. Web servers 101 and 102, the retrieval site 103, and clients (browser) 111-115 shall be connected to the Internet or intranet, respectively. Below, it connects with the retrieval site 103 from each browsers 111-115, and the case where the whereabouts of a document 1 is searched is explained to an example.

[0018] Drawing 3 is a schematic diagram for explaining the actuation at the time of the retrieval site 103 (drawing 1) performing URL retrieval from a web browser 306 (equivalent to the browsers 111-115 of drawing 1). drawing 3 -- setting -- the retrieval demand of a web browser 306 to the "document 1" -- taking out (\*\* of drawing 3) -- the URL retrieval system 301 in the retrieval site 103 searches URL in which a document 1 exists from the database 303 for URL information using a search engine 302 (\*\* of drawing 3). Next, the URL transducer 304 changes searched URL with reference to the table 305 for URL conversion (\*\* and \*\* of drawing 3). This conversion is changed into URL according to the environment of the client which advanced the retrieval demand to searched URL. About the detail of this conversion, it mentions later. URL of the conversion result in the URL transducer 304 is returned to the web browser 306 of retrieval demand origin.

[0019] Drawing 4 is a flow chart which shows the operations sequence of a URL retrieval system. The information (retrieval demand) from a client is received at step 401. This information becomes the user ID of demand origin as shown in 411 and an IP address, and a list from the keyword which are retrieval conditions. According to the demand from a client, URL information is retrieved at step 402 from the database for URL information. The URL information list which includes some URL information as a retrieval result is obtained. Next, with reference to the table 413 for URL conversion, the URL information list of retrieval results is changed at step 403 according to the environment of the client of a requiring agency. Next, at step 404, the changed URL information is orthopedically operated in the format which can be displayed by the client. At step 405, the URL information list operated orthopedically is transmitted to a client, and processing is ended.

[0020] Drawing 5 is the example of the table for URL conversion. When the environment of a client is in agreement with the conditions of the "client information" on drawing 5, the part of URL shown in "a part of URL for conversion" is changed as shown in "a part of URL to change." Each of classification 1-15 is the example of the table for URL conversion. The environment of a client expresses various kinds of present condition about various kinds of information currently held in the client, such as various kinds of present condition of the hardware which constitutes a client, or software, a property, an attribute, and a property, or the user who is using the client, a property, an attribute, a property, etc.

[0021] For client information, in drawing 5, a part of URL "user ID =ABCDE" and for conversion is [ a part of "http://Server1.com" and URL to change ] "http://Server2.com" by classification 1. When the user of ABCDE inputs some retrieval conditions and user ID has published the retrieval demand, therefore, a URL retrieval system When URL corresponding to the retrieval condition is searched from the database for URL information and a part of URL of the retrieval result has "http://Server1.com" The part is changed into "http://Server2.com", and the conversion result is returned to the user concerned. Thereby, according to user ID, it is connectable with the server of a suitable host name or an IP address. For example, access from the U.S. enables it to return URL of a server of Japan, respectively in a U.S. server and access from Japan.

[0022] Classification 2 and 3 is examples which change URL, respectively when the IP address and host name of a client are indicated by "client information." Thereby, in access from the client in the specific location on a network, it is convertible at URL with a near network connection path. Classification 4 is an example which changes URL, when the time which the client has accessed is specific time. Thereby, it was able to be said that URL of an alternative server was returned according to time. Classification 5 is an example changed into URL according to the keyword which the user inputted. The example of classification 5 is an example which performs URL conversion, when the keyword which the user inputted is "Japan." Thereby, when the keyword which the user inputted is a specific thing, URL to which the keyword concerned corresponds can be returned as a retrieval result.

[0023] Classification 6 is an example changed into URL according to the type of a browser. When the browsers which are using the client are for example, A company make, B company make, etc., it may be said that dispersion is in the range of the function which is supporting each company browser, and a display is confused when the information on a certain URL is displayed by the browser by A company. If it changes into URL according to the type of a browser and returns to a client at this time, URL by which information is held in the format which can be automatically displayed by those browsers can be returned to a client. Classification 7 is an example changed into URL according to OS (operating system) of a client. For example, it was able to be said that it changed into URL for accessing the image of suitable amount of information according to the version of OS of a client.

[0024] Classification 8 is an example changed into URL according to the count of access. For example, when the count of access from a specific client is more than fixed, employment of returning URL of the detail version instead of the digest version is attained. Classification 9-12 is examples changed into URL according to a user's situation to access. The employment of the gestalt of changing URL so that a suitable server may be accessed according to a user's affiliation organization which performs the same conversion as user ID according to a user's name changed into URL the information on \*\*\*\*\* is also described to be when a user's executive changed into URL to the information that a font size is big when a user's age is more than fixed is more than fixed is attained.

[0025] Classification 13 is an example changed into URL according to the telephone number of a client. Area is pinpointed with the telephone number and employment of changing URL so that a suitable server may be accessed is attained. Classification 14 is an example changed into URL according to language. It becomes possible to change URL with the language which the user who makes it access is using, so that a suitable server may be accessed. For example, employment of the gestalt of returning URL with the document written in Japanese when the language used is Japanese, and returning URL with the document written in English when the language used is English is attained.

Classification 15 is an example changed into URL according to CPU of a client. According to the engine performance of the machine to access, it becomes possible to change into URL of the page of the optimal amount of information.

[0026] In addition, in drawing 5, although only one user ID was indicated, for example in the column of the "client information" on classification 1, it may be made to perform URL conversion to two or more natural user ID. Moreover, you may express using the so-called wild card as shown in classification 2 or 3. Some conditions are connected by AND or OR and it is good also as conditions for "client information." There may be "a part of URL for conversion" and "a part of [ to change ] combination [ two or more sets of ] of URL.

[0027] When logged in, for example, the information which the user inputted, the information set as the computer which operates as a client beforehand, or the information which the user inputted separately is used for the environment of the client collated with the "client information" on the table for URL conversion. Individual humanity news, such as

a user's age and an executive, holds the individual humanity news corresponding to user ID to the predetermined server, and you may make it acquire it by referring to that based on user ID.

[0028] Moreover, in processing of step 403 of drawing 4 using a table for conversion like drawing 5, when the environment of a client is not in agreement with the conditions of "client information", step 404,405 is processed, using the URL information list searched with step 402 as it is. Moreover, even if the environment of a client was in agreement with the conditions of "client information", when "a part of URL for conversion" does not exist in searched URL, step 404,405 is processed similarly, using the URL information list searched with step 402 as it is.

[0029] Drawing 6 (a) and (b) are the result of URL retrieval, and the example of the screen it was [ the screen ] open using the URL information. Here, the example using the conditions shown in the classification 9 of drawing 5 is shown.

[0030] 602 of drawing 6 (a) shows the screen of a result with which the 20-year-old user 601 inputted some retrieval conditions, and searched URL. The link is stretched, respectively by the character string (hot text) showing the site where 2. "1. aaaa" and "bbbb" agreed on retrieval conditions. That is, if a mouse pointer is set into the part of "aaaa [ 1. ]" and a mouse button is clicked, it will jump to searched predetermined URL. Since a user's age is 20 years old and the conditions of the client information on the classification 9 of drawing 5 are not filled with the example of drawing 6 (a), searched URL is returned to a client as it is (\*\* which is not changed). Therefore, a user's 601 click of the part of "aaaa [ 1. ]" displays Screen 603 it was [ Screen ] open using the URL information on the origin which was not changed.

[0031] 605 of drawing 6 (b) shows the screen of a result with which the 55-year-old user 604 inputted the retrieval conditions same in drawing 6 (a), and searched URL. Since it is the same retrieval conditions, 2. "1. same aaaa" and same "bbbb" as drawing 6 (a) are displayed as a retrieval result. However, since a user's age is 55 years old and the conditions of the client information on the classification 9 of drawing 5 are filled with the example of drawing 6 (b), searched URL is changed and it is returned to a client. Therefore, a user's 601 click of the part of "aaaa [ 1. ]" displays Screen 606 it was [ Screen ] open using the changed URL information.

[0032] When a user's age is 50 or less years old, it displays in the alphabetic character of the usual magnitude, and when a user's age is over 50 years old, he is trying to display in a big alphabetic character in the example of drawing 6, even if it is the document Aaaa of the same contents. In addition, although URL returned from the retrieval site may be displayed as it is as means of displaying of a retrieval result, a hot text is usually displayed like the example of drawing 6, and URL is taken as the form embedded in this hot text in many cases. In this case, a user can present a link place, without not knowing whether it is that from which URL of a retrieval result was changed, and making a user conscious of URL conversion.

[0033] Drawing 2 is the example which applied this invention to the system which changes the information stored in another system by the conversion program on a Web server, and makes it accessible by URL. As drawing 8 of the conventional technique explained, it is the network which constitutes the head office system of a certain firm, and Network A is equipped with the documentation management system 201 which can usually be referred to only from the client of dedication. Network B is the Internet and Network C is intranet which constitutes the branch system of for example, the above-mentioned firm.

[0034] It connects with the documentation management system 201 of Network A with the predetermined method, and Web server 202 belonging to Network B is equipped with the conversion program 203. The client belonging to Network B specifies URL from a browser 211, and connects it to Web server 202. According to the directions from a browser 211, the conversion program 203 of Web server 202 takes out a document from a documentation management system 201, changes it into the format which can be displayed by the browser 211, and transmits to a browser 211. Thereby, the document of a documentation management system 201 can be directly accessed from the client of the network B which cannot access a documentation management system 201. Web server 204 and conversion program 205 of Network C run on Web server 202 and conversion program 203 of Network B, and achieve the same function. Thereby, the document of a documentation management system 201 can be directly accessed from the client of the network C which cannot access a documentation management system 201.

[0035] The URL information agency system 206 is a system for saving URL information and sharing between each client. For example, URL of Web server 202 which should be connected in order to connect with the URL information agency system 206 from a browser 211 first in order to know [ which ] whether it should access via a Web server to access the document of a request of a documentation management system 201 from a browser 211, and to access the document concerned is acquired, and this URL is specified, it connects with Web server 202, and the document concerned is accessed via this Web server 202. The URL information agency system 206 has held the information on the ability to be accessed [ which document ] via which Web server beforehand.

[0036] The same URL conversion function as the retrieval site 103 of drawing 1 is given to this URL information agency system 206. What is necessary is just to specifically make it be the same as for drawing 3 - drawing 6 to have explained. Thereby, from the URL information agency system 206, since URL according to the environment of each client comes to be returned, a browser 211 is connected to Web server 202, and a browser 212,213 can return URL in consideration of a load distribution etc. as it connects with Web server 204.

[0037] In addition, after applying, for example to a Web gateway program and changing the URL information to output according to a user environment also except these, you may make it output, although the gestalt of the above-mentioned implementation explained the example which applied this invention to the URL retrieval system or the URL agency system. Moreover, you may make it change URL not according to a client environment but according to a server environment and a network environment. Thereby, the information which the failure has not generated can be certainly accessed now from a client. A server environment and a network environment express various kinds of present condition about the user who is using various kinds of information currently held in the server or the network, such as various kinds of present condition of the hardware which constitutes a server and a network, or software, a property, an attribute, and a property, or a server and a network, a property, an attribute, a property, etc.

[0038] Although a translation table like drawing 5 was used with the gestalt of the above-mentioned implementation, the method of conversion of URL is not restricted to this. For example, URL which doubled the contents with the user situation is registered into the URL storing database, and it narrows down according to the retrieval conditions according to a user environment, and you may make it output.

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[Translation done.]

## \* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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## CLAIMS

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### [Claim(s)]

[Claim 1] The URL conversion approach characterized by providing this client with the URL information according to the environment of the client which is the URL conversion approach applied to the system which provides a client with URL information, and is the partner who offers URL information, the environment of the server which this client connects, or a network environment.

[Claim 2] The URL conversion approach which is the URL conversion approach which applies to the system which returns URL information according to the demand from a client, and is characterized by to have the step which receives the URL acquisition demand from a client, the step which retrieve the URL information according to this URL acquisition demand, the step which change the retrieved URL information into the URL information according to the environment of said client, and the step which return the URL information after conversion to said client.

[Claim 3] The step changed into the URL information according to the environment of said client is the URL conversion approach according to claim 2 which is what changes URL information according to the type of the user ID of a client, an IP address, a host name, access time, a retrieval keyword, and a browser, the version of an operating system, the count of access, a user's age, a user's executive, a user name, an affiliation organization, the telephone number, language, or a CPU class.

[Claim 4] The URL inverter which is the URL inverter which applies to the system which returns URL information according to the demand from a client, and is characterized by to have a means receive the URL acquisition demand from a client, a means retrieve the URL information according to this URL acquisition demand, a means change the retrieved URL information into the URL information according to the environment of said client, and a means return the URL information after conversion to said client.

[Claim 5] A means to change into the URL information according to the environment of said client is a URL inverter according to claim 4 which is what changes URL information according to the type of the user ID of a client, an IP address, a host name, access time, a retrieval keyword, and a browser, the version of an operating system, the count of access, a user's age, a user's executive, a user name, an affiliation organization, the telephone number, language, or a CPU class.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] General drawing of the system (the 1) concerning the gestalt of operation of this invention

[Drawing 2] General drawing of the system (the 2) concerning the gestalt of operation of this invention

[Drawing 3] The schematic diagram for explaining the actuation at the time of performing URL retrieval from a web browser

[Drawing 4] The flow chart Fig. showing the operations sequence of a URL retrieval system

[Drawing 5] Drawing showing the example of the table for URL conversion

[Drawing 6] Drawing showing the example of the screen it was [ the screen ] open using the result of URL retrieval, and its URL information

[Drawing 7] Drawing showing signs that the information on a Web server is conventionally accessed from the Web client by the system

[Drawing 8] Drawing showing a system conventionally changes the information stored in another system by the conversion program on a Web server, and made accessible by URL

### [Description of Notations]

101,102 [ -- A documentation management system, 202,204 / -- A Web server, 203,205 / -- A conversion program, 206 / -- A URL information agency system 211-213 / -- A browser, 301 / -- A URL retrieval system, 302 / -- A search engine, 303 / -- The database for URL information 304 / -- A URL transducer, 305 / -- The table for URL conversion 306 / -- Web browser. ] -- A Web server, 103 -- A retrieval site, 111-115 -- A browser, 201

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[Translation done.]

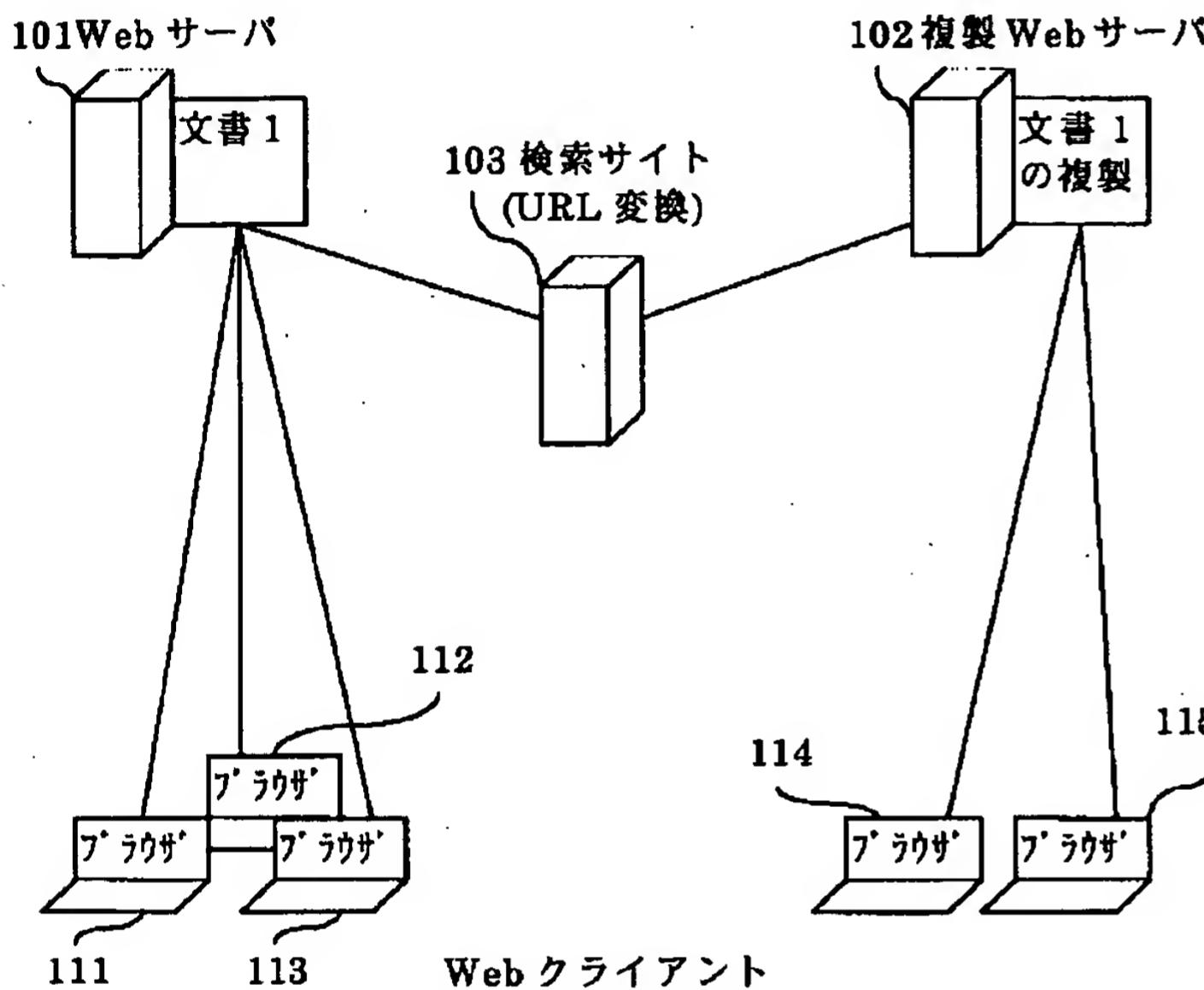
## \* NOTICES \*

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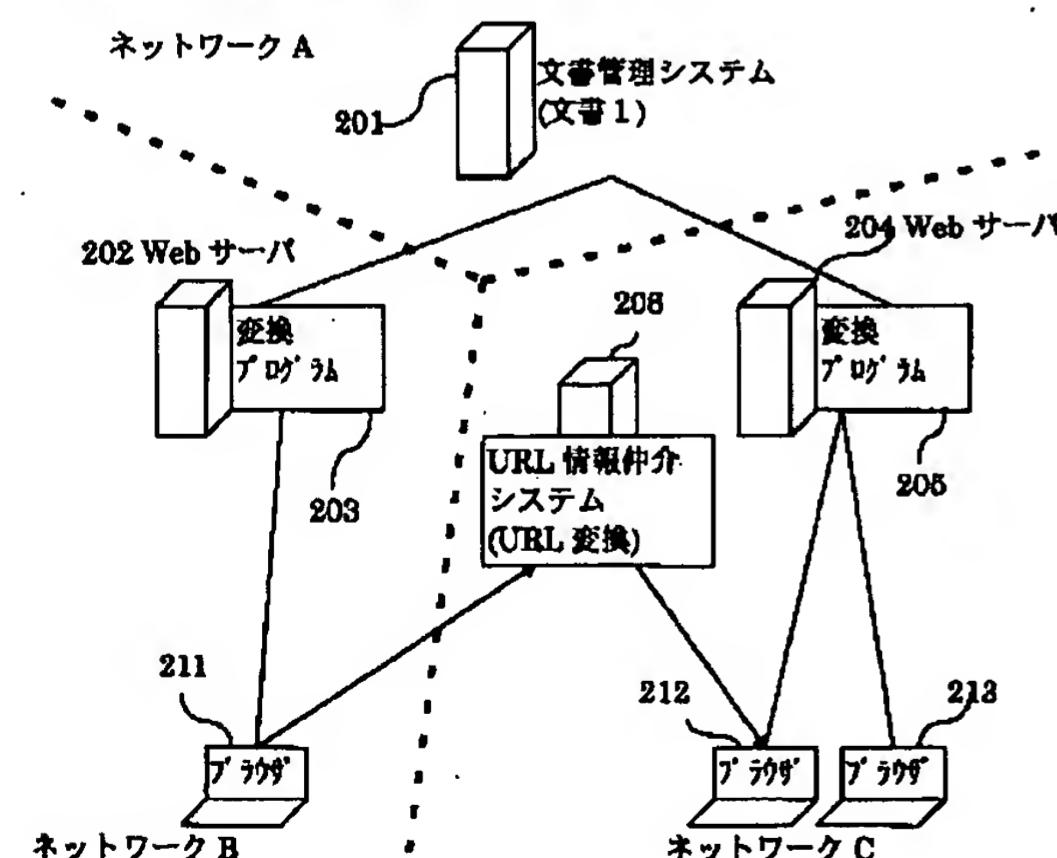
1. This document has been translated by computer. So the translation may not reflect the original precisely.
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## DRAWINGS

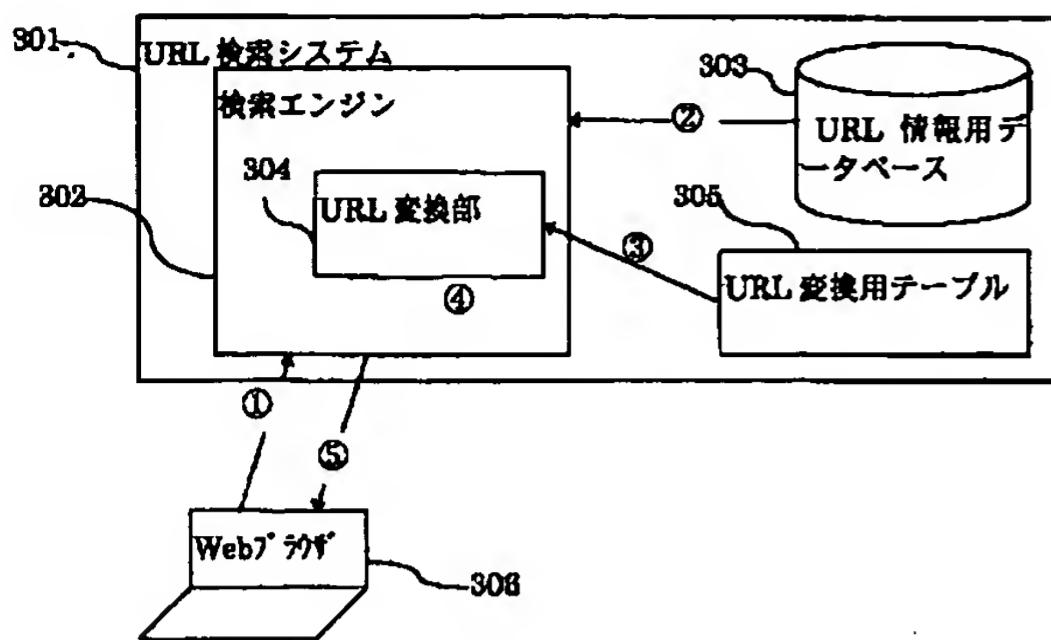
[Drawing 1]  
本発明の実施の形態に係るシステム全体図(その1)



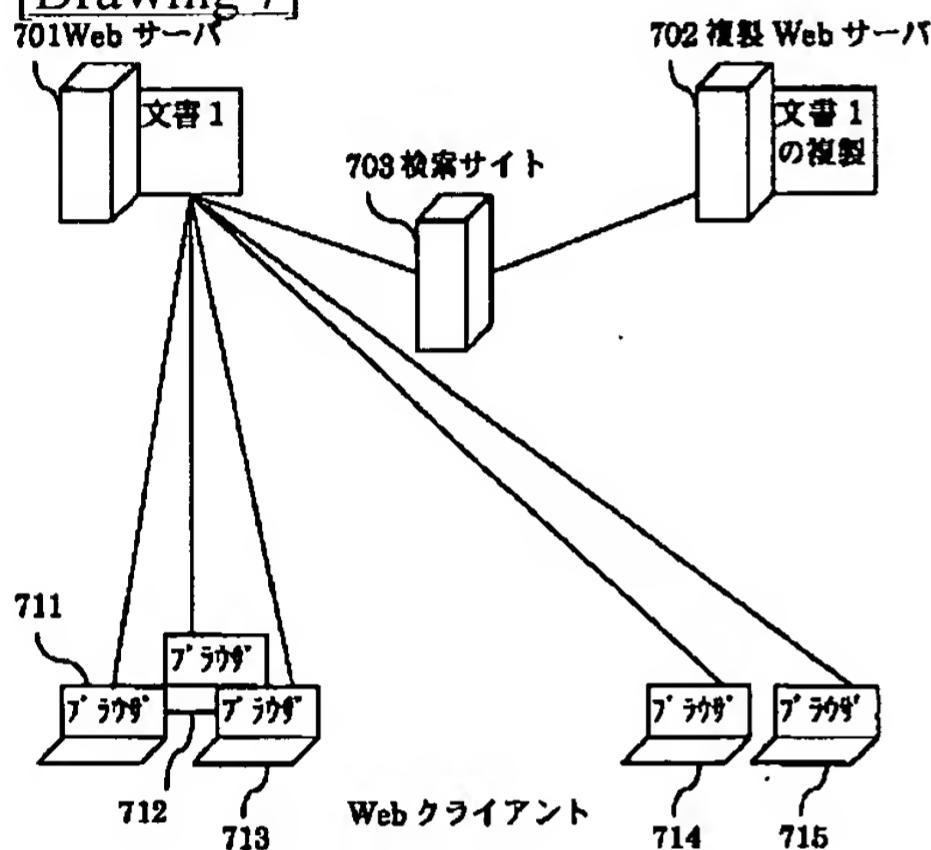
[Drawing 2]  
本発明の実施の形態に係るシステム全体図(その2)

[Drawing 3]

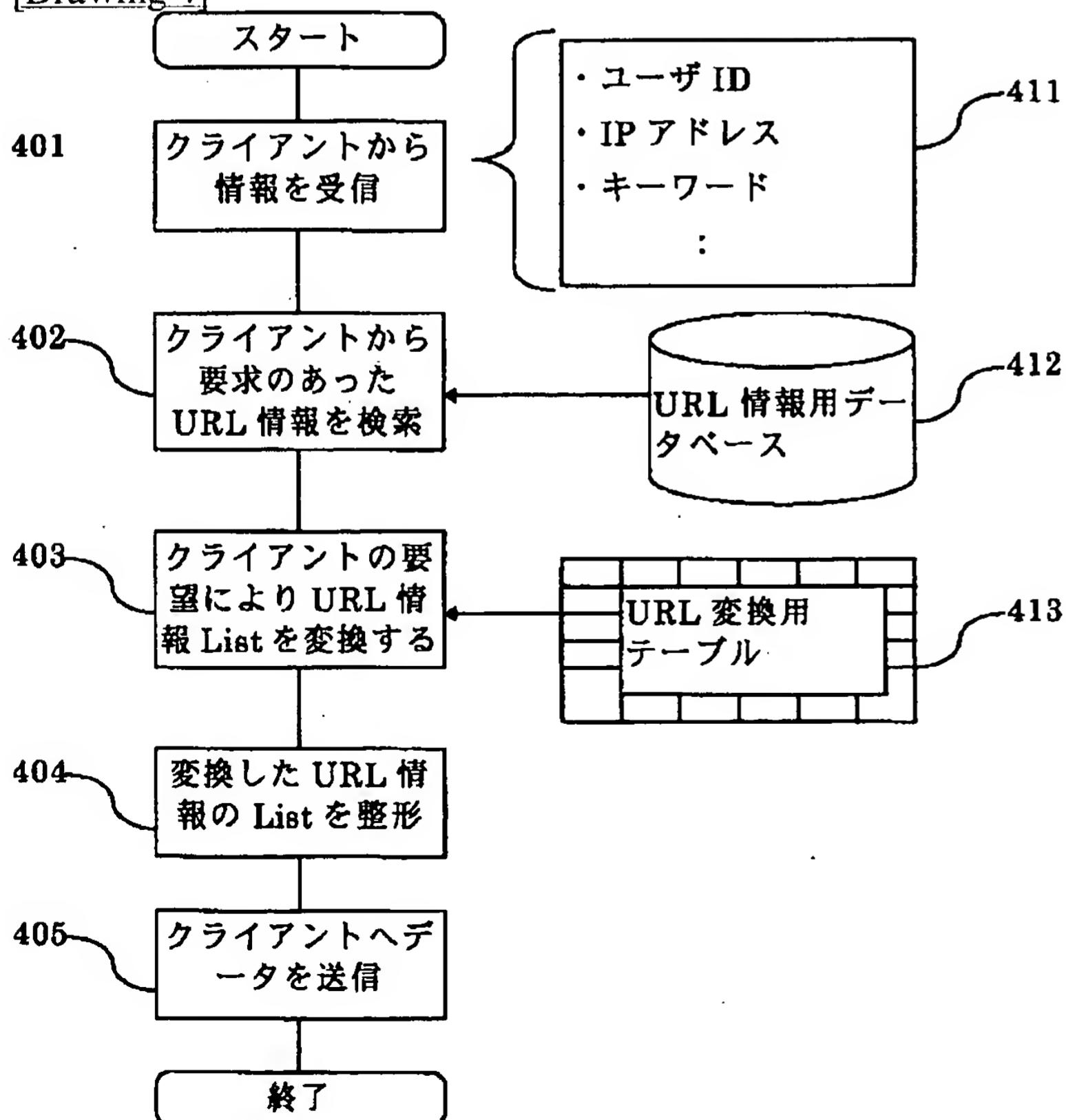
URL 検索システム動作説明図

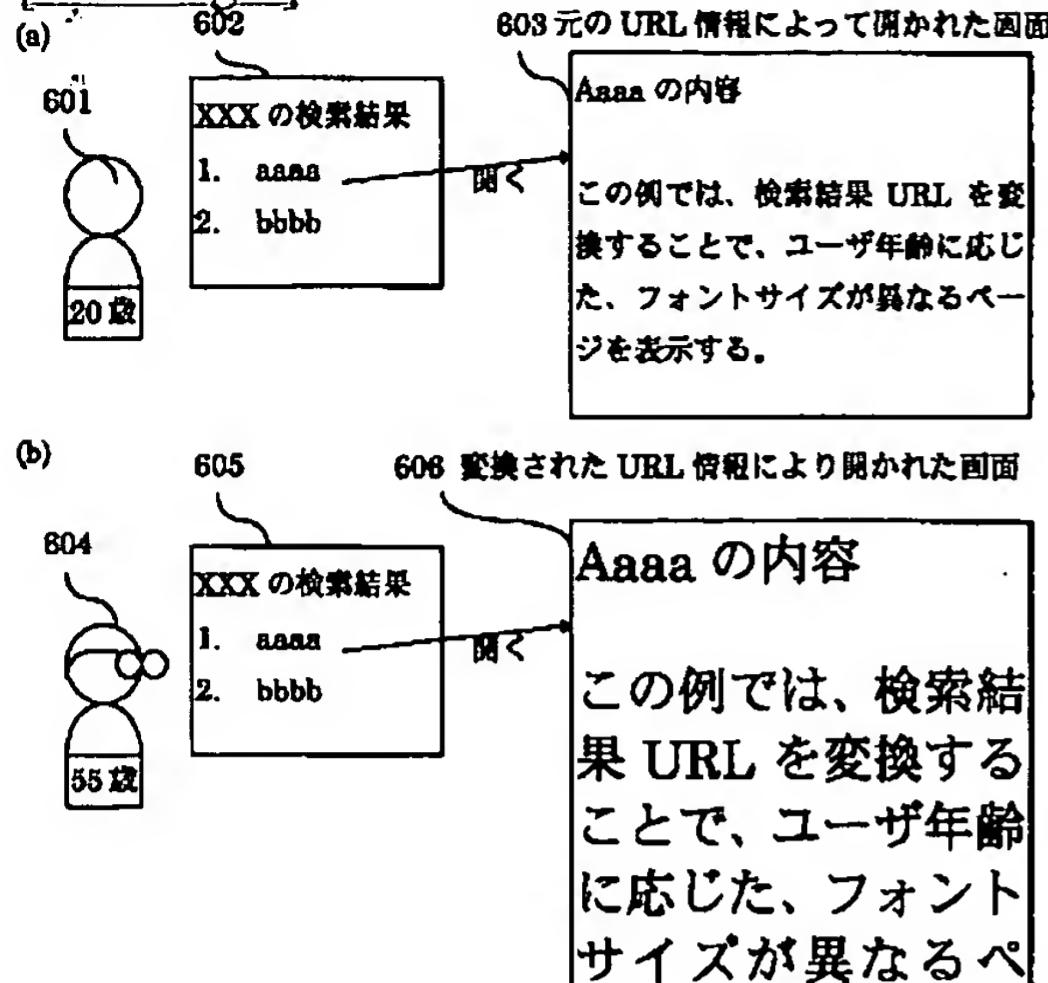
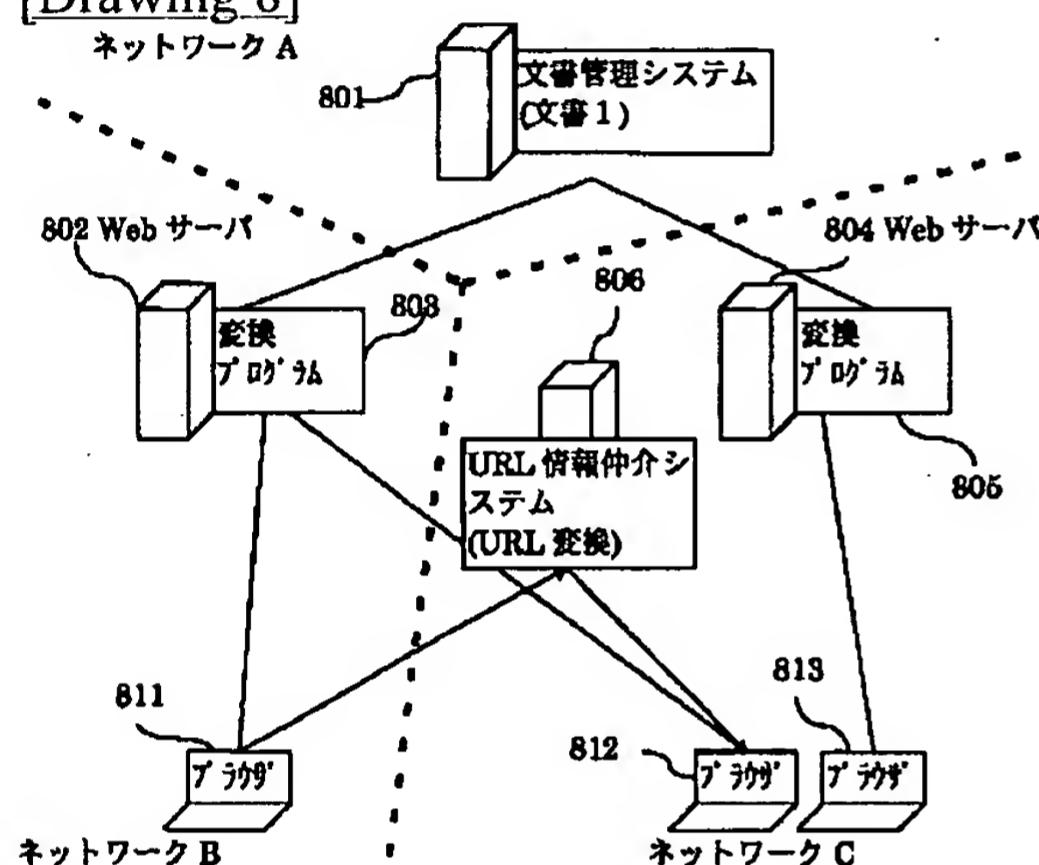


[Drawing 7]



[Drawing 4]



[Drawing 6][Drawing 8][Drawing 5]

## URL 変換用テーブルの例

| 種別              | クライアント情報                   | 変換対象の URL の一部  | 変換する URL の一部  |
|-----------------|----------------------------|--|---|
| 1 <sup>2)</sup> | ユーザ ID=ABCDE               | http://Server1.com                                     | http://Server2.com                                    |
| 2               | IP=124.23.221.12           | http://inside  | http://outside  |
| 3               | ホスト名<br>=***.hitachi.co.jp | http://abc.com/docman                                  | http://abc.co.jp /docman                              |
| 4               | 1999/1/31-<br>2010/12/31   | ftp://Server1.com                                      | ftp://Server2.com                                     |
| 5               | SerchKey1="日本"             | http://aaa.com/English/Ind<br>ex.html                  | http://aaa.com/Japanese/I<br>ndex.html                |
| 6               | ブラウザタイプ=A 社製<br>ブラウザ       | http://OldTypeSystem.aaa.<br>bbb.cp.jp                 | http://NewSystem.aaa.bbb.<br>cp.jp                    |
| 7               | クライアント OS バージ<br>ョン=3.1    | http://aaa.com/LargeSize.g<br>if                       | http://aaa.com/SmallSize.gi<br>f                      |
| 8               | アクセス回数>10回                 | http://Search.aaa.bbb.cp.jp<br>/Search?Level=Normal    | http://Search.aaa.bbb.cp.jp<br>/Search?Level=Property |
| 9               | ユーザの年齢>50歳                 | http://Search.aaa.bbb.cp.jp<br>/NormalFontSizeDocument | http://Search.aaa.bbb.cp.jp<br>/LargeFontSizeDocument |
| 10              | ユーザの役職<課長                  | http://Search.aaa.bbb.cp.jp<br>/Search?Level=Normal    | http://Search.aaa.bbb.cp.jp<br>/Search?Level=Property |
| 11              | ユーザ名=A さん                  | http://Server1.com                                     | http://Server2.com                                    |
| 12              | 所属組織=B 部署                  | http://Search.aaa.bbb.cp.jp<br>/Search?Area=X          | http://Search.aaa.bbb.cp.jp<br>/Search?Area=B         |
| 13              | 電話番号=06-XXXX<br>-XXXXX     | http://Tokyo.aaa.bbb.cp.jp<br>/XXX/Index.html          | http://Osaka.aaa.bbb.cp.jp<br>/XXX/Index.html         |
| 14              | 言語=Japanese(S-JIS)         | http://aaa.com/English/Ind<br>ex.html                  | http://aaa.com/Japanese/I<br>ndex.html                |
| 15              | CPU=XXXX                   | http://aaa.com/LargeSize.g<br>if                       | http://aaa.com/SmallSize.gi<br>f                      |

[Translation done.]